

Overview of Micro-pulse Lidar (MPL) Observations During CLAMS

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- Micro-pulse Lidar Systems (MPL)
 - compact & semi-autonomous
 - 523 nm wavelength
 - PRF 2500 Hz
 - eye-safe, output energy in μJ
 - small FOV, no multiple scattering

Transceiver:

20cm Cassegrain Telescope on top
Laser Head, Detector, & Optics below

Scalar Unit:

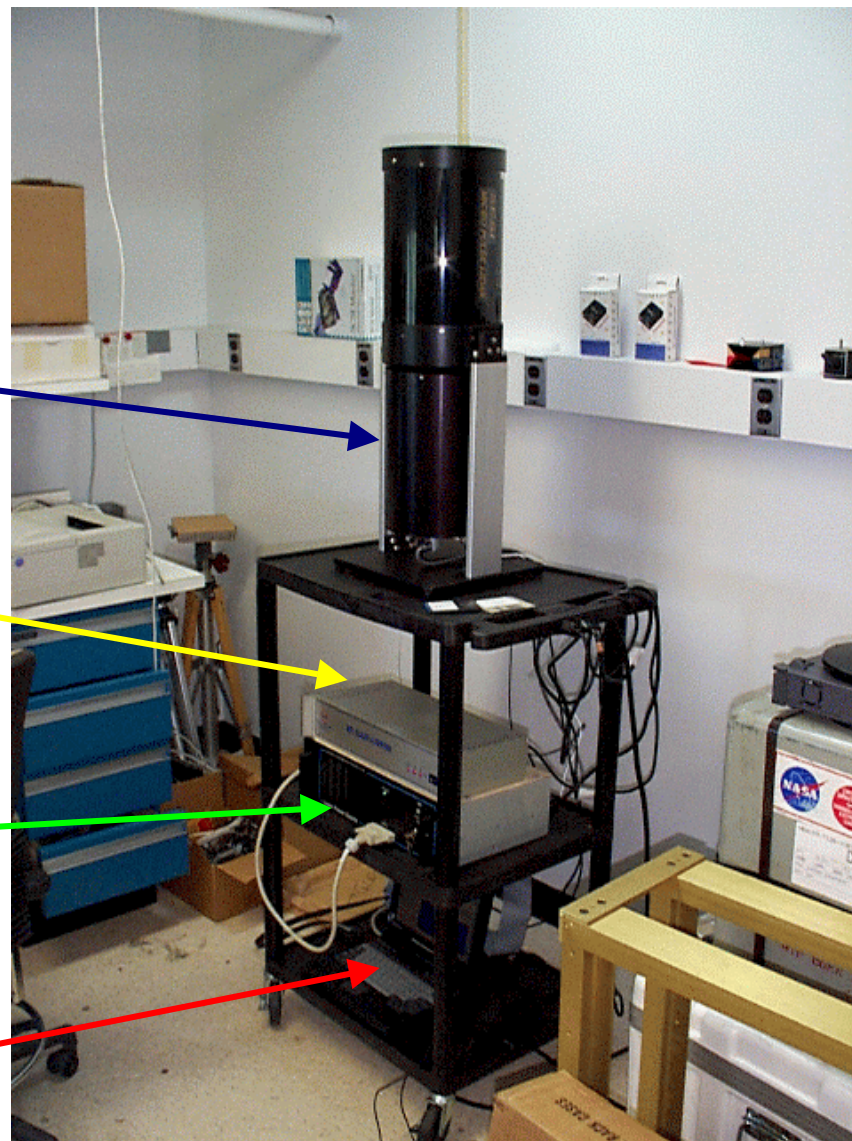
Data Binning at 30, 75, 150, 300 m res

Laser Power Supply:

1 W Nd:YLF Laser Diode
(Doubled to 523nm on Head)

Laptop Computer:

Data Acquisition & Storage (1 min res)



The Micro-pulse Lidar Network : (MPL-Net)

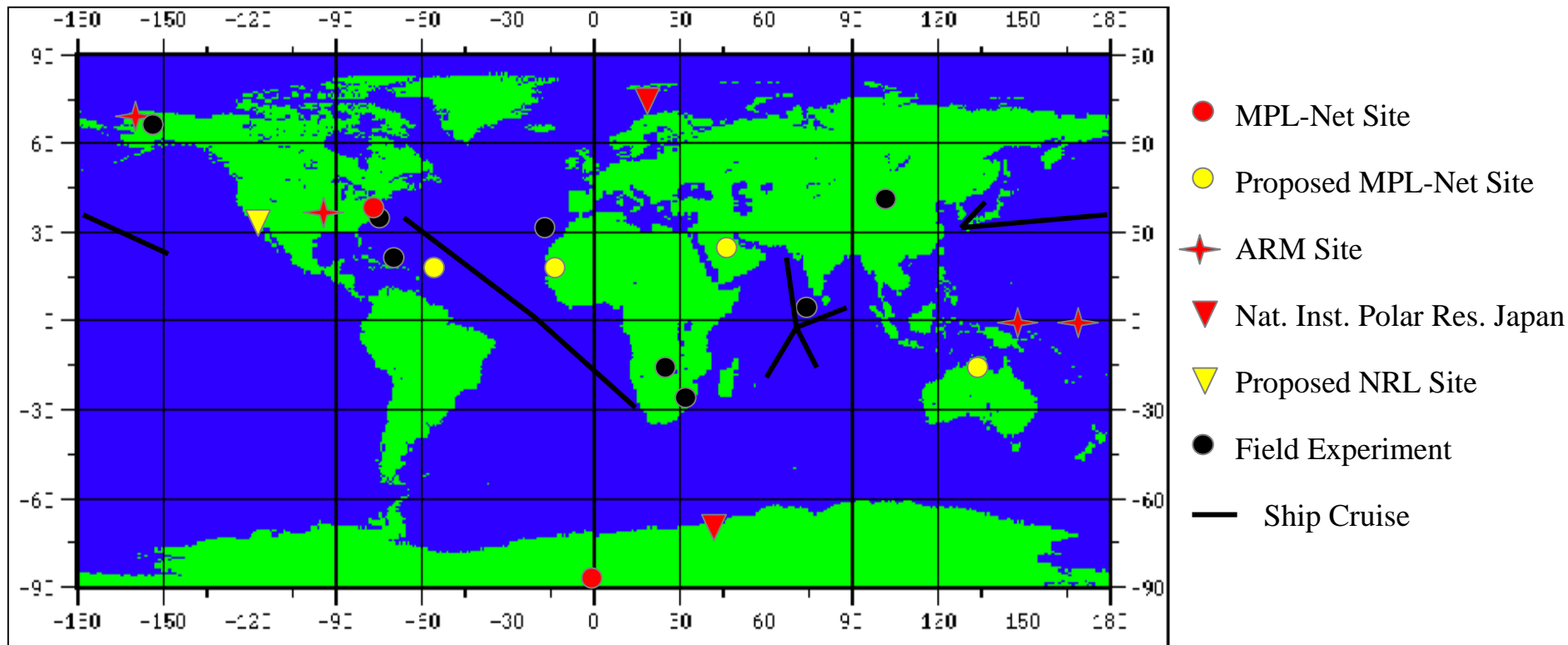
Mission: Long-term, world-wide observations of aerosol and cloud vertical structure

Funding: NASA Earth Observing System (sites/field exp), NASA SIMBIOS Program (ocean cruises)

Activities:

- Setup new MPL-Net funded sites, co-located with AERONET sunphotometers
- Incorporate existing Atmospheric Radiation Measurement Program MPL sites
- Partner with other independent research groups interested in MPL measurements
- Participate in field experiments and research cruises

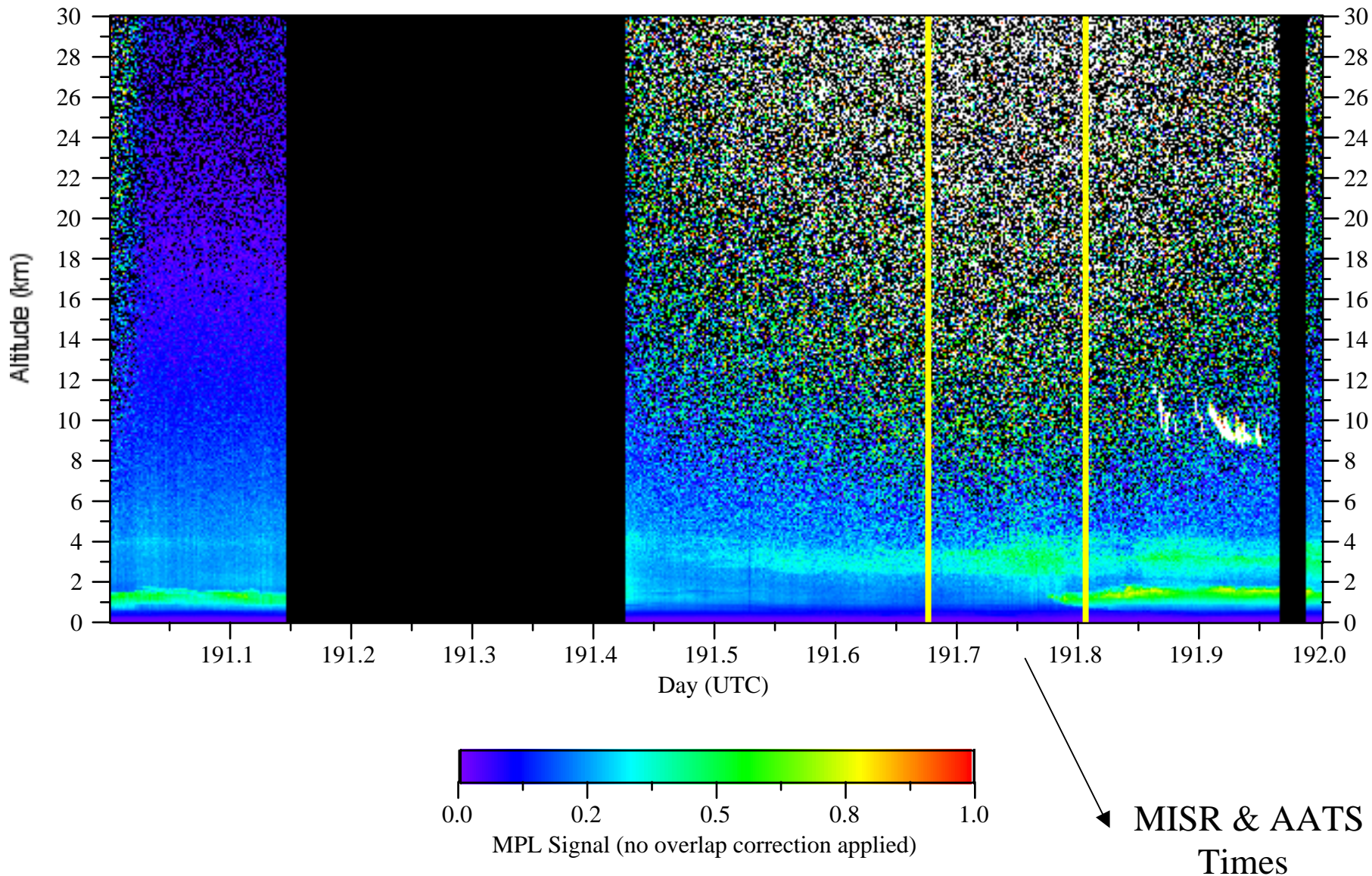
Satellite Lidar Calibration/Validation: GLAS - ICESat (2002), CALIPSO - ESSP3 (2004)



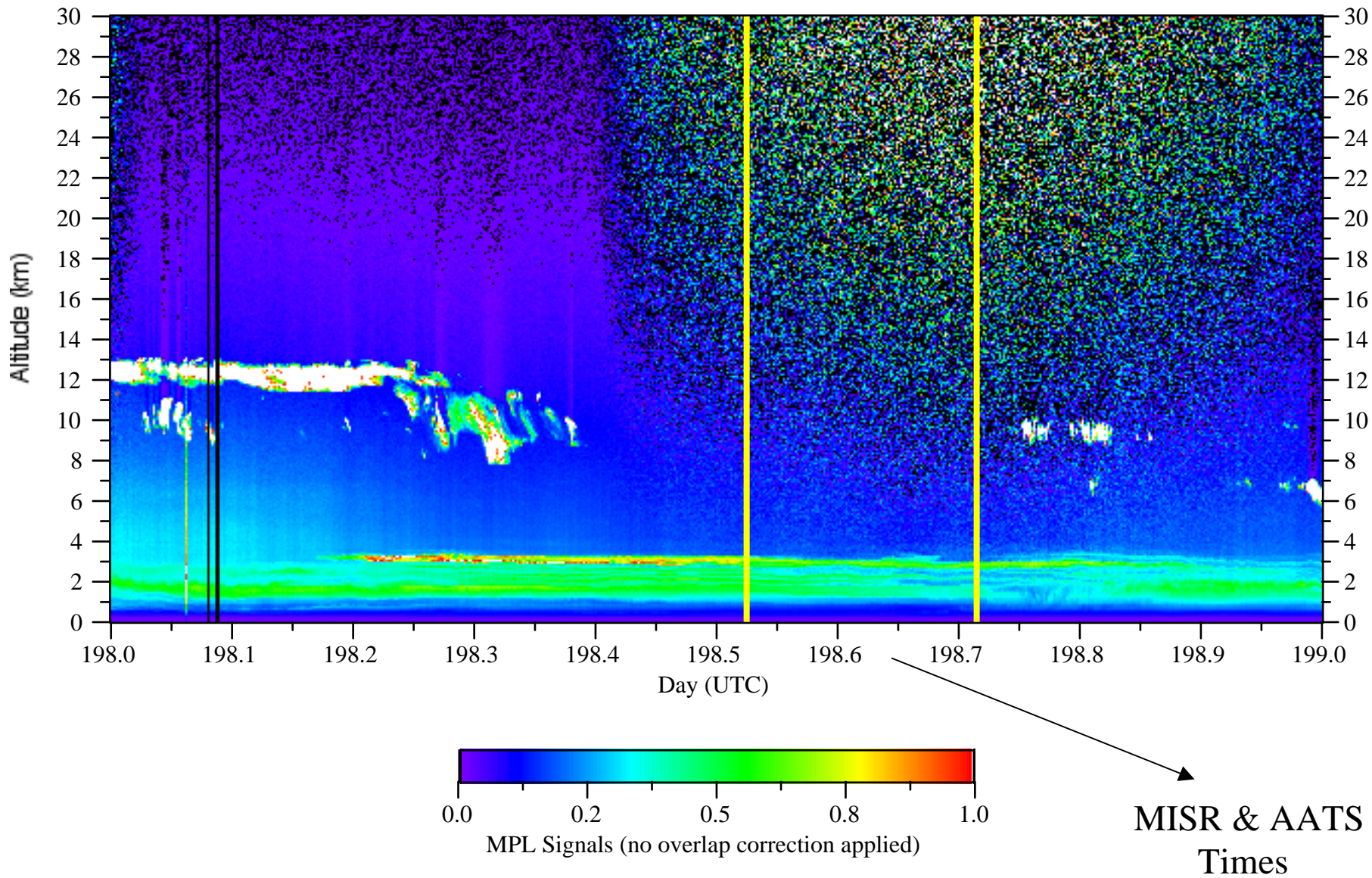
Status of CLAMS MPL Data:

- Problems exist in the raw data files
 - Time resolution changes occur, as well as file corruption by incorrectly starting 3rd party software on control computer
 - Problems not found until after experiment due to lack of internet connection at site
 - End result: not possible to use automated MPL-Net data processing routines
 - I've agreed to manually process a limited section of the data
 - to include profile of partially corrected MPL signal & estimate of boundary layer height, and elevated aerosol/cloud heights
 - no optical properties processing (ie, optical depths, extinction profiles)
- Ralph Kahn (MISR) and Jens Redemann (AATS) have requested the following MPL data
 - July 10
 - 1606 UTC (MISR)
 - 1900-1930 UTC (AATS)
 - July 17
 - 1612 UTC (MISR)
 - 1300-1335 UTC (AATS)
 - July 26
 - 1606 UTC (MISR)
 - 1615-1645 UTC (AATS)
 - August 2
 - 1612 UTC (MISR)
 - 1630-1700 and 1930-2000 UTC (AATS)

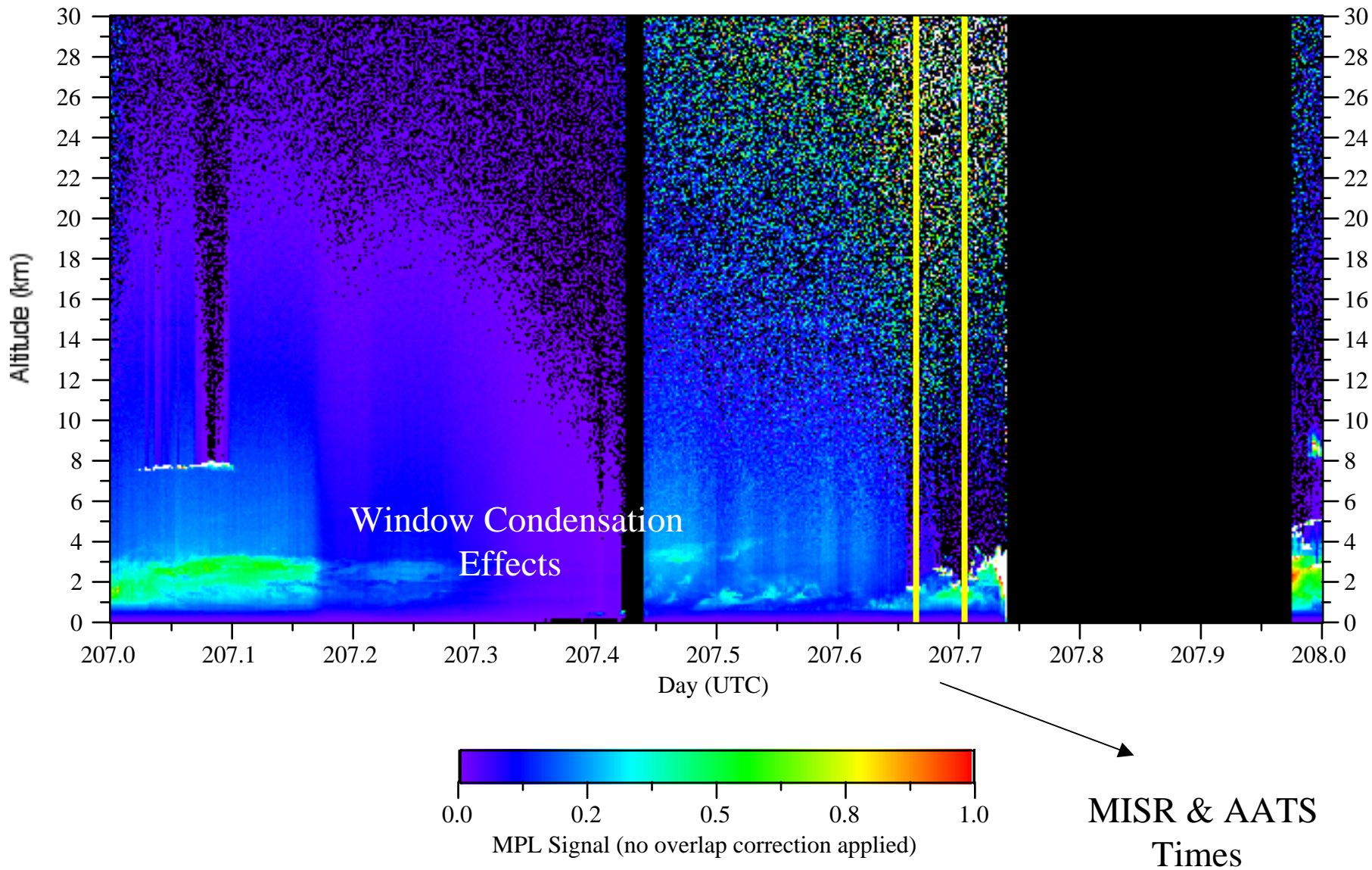
* All dates/times are available



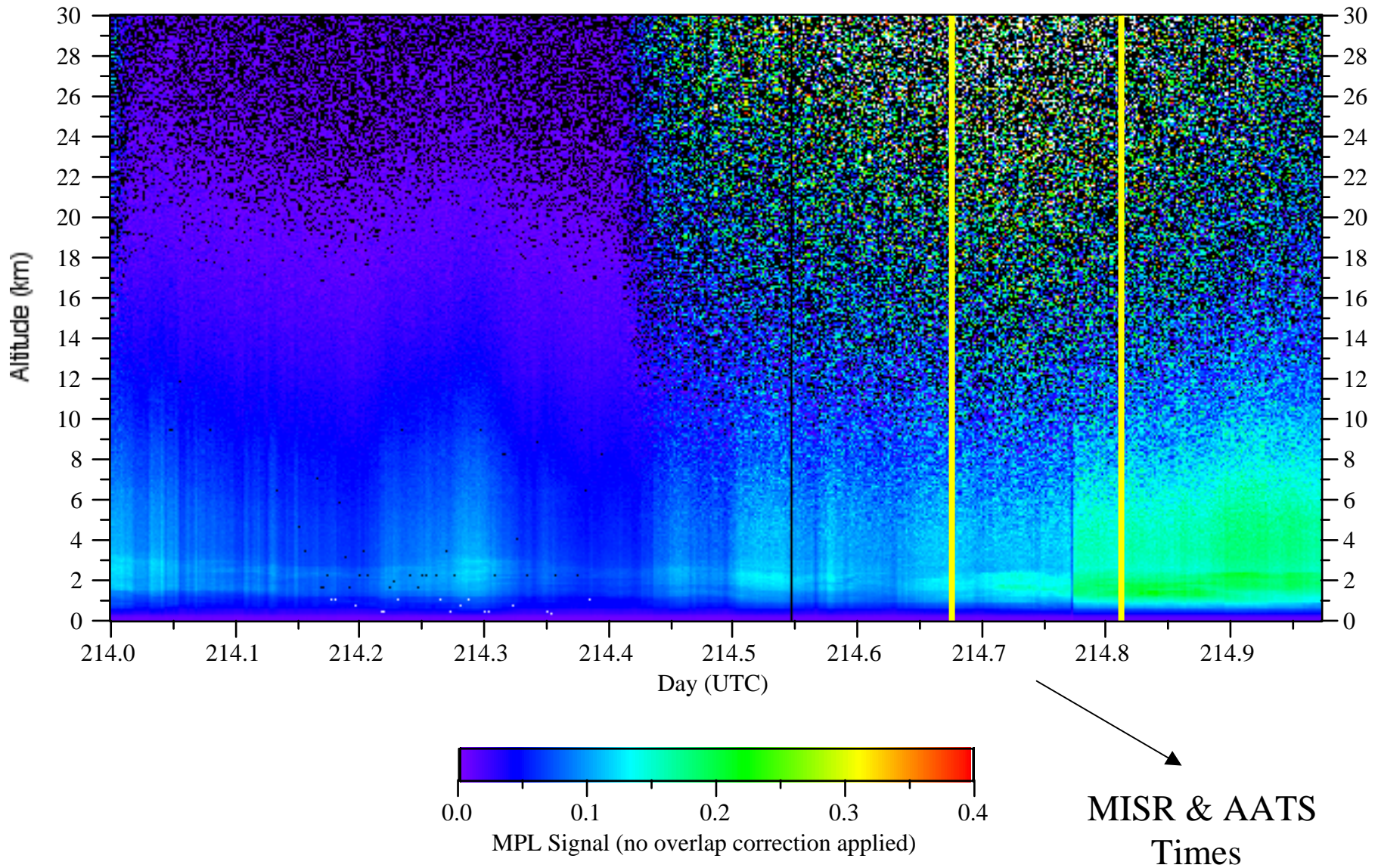
* Time res set to 5 secs (I did not request this)
 note that signal-to-noise is bad at this time res
 will average to 1 minute (normal)



* Time res back to normal (1 minute)



* Time res normal (1 minute)



* Time res was set to normal (1 minute), however, incorrectly operated 3rd party software caused missing data (only every other minute was stored, other data effects possible)